CLAIMS

1. A method for preparing an $Li_{1+\alpha}V_3O_8$ compound, characterized in that it consists in preparing a precursor gel by reacting hydrogen peroxide with α-V_2O_5 in aqueous medium, in the presence of a lithium precursor, and then in subjecting said gel to a heat treatment in an oxidizing atmosphere at a temperature of between 260°C and 580°C.

2. The method as claimed in claim 1, characterized in that the lithium precursor is chosen from $LiOH \cdot H_2O$, LiCl, $LiNO_3$ or a lithium salt of a carboxylic acid.

3. The method as claimed in claim 2, characterized in that the lithium carboxylic acid salt is chosen from lithium acetylacetonate, lithium acetate, lithium stearate, lithium formate and lithium oxalate.

4. The method as claimed in claim 1, characterized in that the lithium precursor is introduced in powder form into the reaction medium.

5. The method as claimed in claim 1, characterized in that the lithium precursor is introduced into the aqueous solution at the same time as the α-V_2O_5.

6. The method as claimed in claim 1, characterized in that the lithium precursor is introduced into the reaction medium after the addition of α-V_2O_5, before the end of gelling.

7. The method as claimed in claim 1, characterized in that the duration of the heat treatment is between 10 minutes and 10 hours.

8. The method as claimed in claim 1, characterized in that the respective Li precursor and α-V_2O_5 quantities in the reaction medium are preferably such that:

- 0.16 mol/l < [Li] < 0.55 mol/l;
- 0.22 mol/l < $[V_2O_5]$ < 0.75 mol/l;
- 1.15 < $[V_2O_5]/[Li]$ < 1.5.

9. The method as claimed in claim 1, characterized in that the hydrogen peroxide concentration in the reaction medium is between 10% and 50% by volume.

10. A compound of formula $Li_{1+\alpha}V_3O_8$ (where 0.1 < α < 0.25) consisting of needle-shaped particles that have a bimodal distribution and have a width l, a length L and a thickness t such that:

- the needles of a first mode have a length L of 10 to 50 μm;
- the needles of a second mode have a length L of 1 to 10 μm; and
- 4 < L/ l < 100 and 4 < L/t < 100.

11. A positive electrode for a lithium battery, characterized in that it contains an $Li_{1+\alpha}V_3O_8$ compound as claimed in claim 10 as active material.

12. The positive electrode as claimed in claim 11, characterized in that it further contains:

- a binder conferring mechanical integrity;
- a material conferring electronic conduction; and
- optionally, a compound conferring ionic conduction.

13. The positive electrode as claimed in claim 12, characterized in that:

- the content of active material is between 40 and 90% by weight;
- the content of binder is from 5 to 15% by weight;

- the content of material conferring electronic conduction is 5 to 20% by weight; and

- the content of compound conferring ionic conduction is less than 15% by weight.

14. The positive composite electrode as claimed in claim 12, characterized in that the material conferring electronic conduction is a carbon black.

15. The electrode as claimed in claim 12, characterized in that the binder is formed by a non-solvating polymer, a solvating polymer or a blend of the two.

16. The electrode as claimed in claim 15, characterized in that the binder further contains an aprotic polar compound.

17. The electrode as claimed in claim 12, characterized in that the compound conferring ionic conduction is a lithium salt, chosen from $LiClO_4$, $LiPF_6$, $LiAsF_6$, $LiBF_4$, LiR_FSO_3, $LiCH_3SO_3$, lithium bis(perfluoroalkyl)sulfonimides, lithium bis(perfluorosulfonyl)methides and lithium tris(perfluorosulfonyl)methides.

18. A battery comprising a positive electrode and a negative electrode separated by an electrolyte comprising a lithium salt dissolved in a solvent, characterized in that the positive electrode is an electrode as claimed in one of claims 11 to 17.